Comparisons of Job Characteristics

Focus Occupation: Chemists (19-2031)
Associated Occupation: Materials Scientists (19-2032)

Compare Knowledge
Compare Skills
Compare Abilities
Compare Detailed Work Activities
Compare Tools and Technologies

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 92

Focus Occupation: Chemists (19-2031)
Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Chemistry	4.8	23.3	21.8	0	Current knowledge level may be sufficient
Engineering and Technology	5.7	16.2	9.8	<<	Extensive education and/or training may be required
Mathematics	9.2	15.5	17.0	0	Current knowledge level may be sufficient
Administration and Management	8.4	13.3	9.0	<<	Extensive education and/or training may be required
Production and Processing	6.0	11.8	11.3	0	Current knowledge level may be sufficient
Physics	4.3	9.6	9.1	0	Current knowledge level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 90

Focus Occupation: Chemists (19-2031)
Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Science	4.5	16.8	17.3	0	Current skill level may be sufficient
Reading Comprehension	10.7	14.6	15.7	0	Current skill level may be sufficient
Critical Thinking	10.8	13.8	12.5	<	A higher skill level may be required
Complex Problem Solving	9.1	12.0	12.3	0	Current skill level may be sufficient
Operations Analysis	5.0	11.7	7.9	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 95

Focus Occupation: Chemists (19-2031)
Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Oral Expression	12.4	15.4	14.1	0	Current ability level may be sufficient
Oral Comprehension	12.5	15.3	15.9	0	Current ability level may be sufficient
Written Comprehension	11.0	14.2	14.9	0	Current ability level may be sufficient
Inductive Reasoning	10.2	14.1	13.8	0	Current ability level may be sufficient
Deductive Reasoning	10.6	13.8	13.6	0	Current ability level may be sufficient
Problem Sensitivity	11.1	13.5	12.9	0	Current ability level may be sufficient
Written Expression	9.8	13.4	13.4	0	Current ability level may be sufficient
Originality	7.6	12.4	9.3	<<	Extensive improvement in abilities may be required
Category Flexibility	9.0	11.9	13.6	>	Current ability level is likely sufficient
Flexibility of Closure	7.8	10.6	10.7	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	10.3	12.2	>	Current ability level is likely sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 95

Focus Occupation: Chemists (19-2031)
Associated Occupation: Materials Scientists (19-2032)

Work Activities	Exclusivity of Activity
Adhere to safety procedures	12
Advise clients or customers	19
Advise governmental or industrial personnel	28
Analyze chemical experimental, test, or analysis data or findings	69
Analyze scientific research data or investigative findings	27
Classify plants, animals, or other natural phenomena	69
Collect scientific or technical data	30
Collect statistical data	47
Communicate technical information	4
Conduct laboratory research or experiments	57
Conduct standardized qualitative laboratory analyses	62
Conduct standardized quantitative laboratory analyses	62
Confer with engineering, technical or manufacturing personnel	25

Confer with research personnel	50
Confer with scientists	54
Develop new products based on scientific research results	71
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop policies, procedures, methods, or standards	21
Develop scientific or mathematical hypotheses, theories, or laws	62
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Direct implementation of new procedures, policies, or programs	60
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Forecast or predict phenomena based upon research data	71
Maintain records, reports, or files	5
Make decisions	24
Make presentations	13
Perform statistical analysis in physical science or geological research	71
Plan scientific research or investigative studies	48
Prepare reports	8
Prepare technical reports or related documentation	22
Present research papers or dissertations on physical science issues	78
Recommend further study or action based on research data	60
Record test results, test procedures, or inspection data	48
Resolve engineering or science problems	46
Use chemical processing emergency procedures	84
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use hazardous materials information	35
Use knowledge of investigation techniques	16
Use laboratory equipment	60
Use library or online Internet research techniques	21
Use mathematical or statistical methods to identify or analyze problems	30
Use physical science research techniques	68
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17
Write business project or bid proposals	48
Write research or project grant proposals	33
Write scholarly or technical research papers	36

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 80

Focus Occupation: Chemists (19-2031)
Associated Occupation: Materials Scientists (19-2032)

Tools and Technologies	Exclusivity
Chemical evaluation instruments and supplies	10
Computers	1
Content authoring and editing software	1
Crystallography equipment	23
Data management and query software	1
Development software	4
Electrical measuring and testing equipment	7
Electrochemical measuring instruments and accessories	9
Fluid mechanics equipment	11
Geophysical and geotechnical instruments	23
Indicating and recording instruments	2
Industry specific software	1
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory electron and solid state physics equipment	29
Laboratory enclosures and accessories	17
Laboratory environmental conditioning equipment	24
Laboratory freeze dryers and lyopholizers and accessories	40
Laboratory furnaces and accessories	26
Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Light and wave generating and measuring equipment	4
Liquid and gas flow measuring and observing instruments	15
Metals and metallurgy and structural materials testing instruments	15
Network applications software	1
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.